Space Weather Forecast

Issued on Wednesday, 27 October 2021 at 13:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate-class X-ray flares, and Minor/Moderate Radio Blackouts (R1/R2) on the sunlit side of Earth.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity was low to moderate in the 24-hour period, with several Common-class flares and one Moderate class flare observed. The Moderate-class flare emanated from a new region rotating onto the northeastern solar horizon, AR2891, which is also likely to have been the source for several far-sided Coronal Mass Ejections (CMEs) in the past week, as observed in satellite imagery. This new region is one of six on the current facing side of the sun, with the others all appearing in the southern solar hemisphere. There is one larger and more complex region amongst these which has the potential to give larger flares, although activity so far has been muted from this region.
While there are numerous 'filaments' on the sun (arcs of plasma - a possible source of CMEs should they lift off), there is no evidence of Earth-bound CMEs in available imagery at present.

Solar Wind / Geomagnetic Activity: The solar wind speed was at slow levels to start, but rose slightly around 26/2230 UTC to vary between 360-410 km/s. The Interplanetary Magnetic Field was weak, with the north-south component also varying weakly.
The result of the above solar wind measures was Quiet geomagnetic activity throughout, Kp 0-2.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Common-class flares are expected (90% risk), with a chance (40%) of Moderate-class flares. This is the result of the complexity of one of the regions in the southern hemisphere, and the previous activity of the region on the northeastern limb.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs are expected in this forecast period. An enhancement to around 450-500 km/s is possible either later on Day 2 or early Day 3 (28-29 Oct) due to a possible coronal hole fast wind. An enhancement was seen at the STEREO-A spacecraft which would correspond with these timings. Geomagnetic activity is expected to be mainly Quiet to Unsettled, but with a chance of Active intervals should we observe any faster solar winds on Days 2 or 3.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected, although chances are raised just slightly above background due to the more complex sunspot on the disc. This may rise slightly as the region on the northeastern limb rotates further across towards the western side of the Sun.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	3	3
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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